

THE TOTAL ECLIPSE OF THE SUN, MAY 1900.

WE have received the following circular from the U.S. Naval Observatory, Georgetown Heights, Washington, D.C., dated May 17.

In anticipation of the total eclipse of the sun May 28, 1900, the United States Navy Department has arranged with the Secretary of the Treasury to have admitted free of duty the instruments of foreign astronomers who may come to this country to observe the eclipse.

To this end astronomers abroad who contemplate an expedition to the United States are invited to notify the Superintendent of the Naval Observatory of the probable date of their arrival, with the name of the port at which they propose to disembark. The Navy Department will forward to the consuls of the different countries to which these observers belong, stationed at the ports in the United States at which the gentlemen shall arrive, a letter stating their purpose in travelling, which letter will be countersigned by the consul and presented to the collector at the port as a proof of their identity. Upon this the collector will extend all proper facilities for the speedy delivery of the instruments in question, free of duty and charges.

The Superintendent of the Observatory will be glad to hear from each of the proposed expeditions, in order that he may render such assistance as lies in his power. The path of totality extends through a thickly settled portion of the country, including some principal cities. Facilities for transportation are excellent, but it is recommended that instruments be securely packed and marked "delicate instruments—handle with care." The climate at that season is warm. The chances for clear weather are good.

Full information regarding routes of travel to proposed points, and other particulars, can best be obtained through consuls. Through the regular diplomatic channels notice should be conveyed to the local authorities of the city or town selected as a post of observation.

This Observatory will issue a pamphlet of instructions, containing large scale maps showing path of totality.

C. H. DAVIS,
Captain, U.S.N., Superintendent.

NOTES.

THREE Fellows of the Royal Society have had honours conferred upon them on the occasion of her Majesty's eightieth birthday. Prof. J. S. Burdon Sanderson, Regius professor of medicine in the University of Oxford, has had the dignity of a baronetcy conferred upon him; and physiology is also honoured in the person of Prof. Michael Foster, joint-secretary of the Royal Society, and president-elect of the British Association, who has been appointed to be K.C.B. The promotions from C.B. to K.C.B. include Mr. W. H. Preece, who recently retired from his position as engineer-in-chief of the General Post Office.

At the annual meeting of the Royal Society for the election of Fellows, the fifteen candidates nominated by the Council were elected into the Society. The names and qualifications of these candidates were given in NATURE of May 11 (p. 31).

THE five vacancies in the list of Foreign Members of the Royal Society have been filled by the election of the following: Prof. Ludwig Boltzmann, of the University of Vienna; Prof. Anton Dohrn, late Director of the Zoological Station, Naples; Prof. Emil Fischer, of the University of Berlin; Dr. Neumayer, of Hamburg; and Dr. Treub, Director of the Botanical Gardens, Buitenzorg.

THE Académie Royale des sciences de Turin announces that the Vallauri prize of 30,000 lire (£1200) will be awarded for the most important and celebrated work in the realm of physical science—using this term in a wide sense—published between January 1 of this year and December 31, 1902. The prize will be awarded without consideration of nationality, and no members of the Academy can participate in the competition.

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No account will be taken of works in manuscript. The president of the Academy is Prof. Guiseppe Carle, the secretary of the section of physical sciences is Prof. A. Naccari.

THE anniversary meeting of the Royal Geographical Society was held on Monday, and the medals awarded by the Council of the Society, as announced in our issue of May 11, were presented. The meeting was also made the occasion for the American Ambassador to present Sir John Murray with the gold medal awarded to him by the Geographical Society of New York. The medal contains the following inscription:—"Cullum Geographical Medal. Awarded to Sir John Murray, K.C.B., naturalist, deep sea explorer, oceanographer, editor of *Challenger Reports*, 1899."

IT is reported that the *Bakan* transport has left the Neva on her voyage to Spitsbergen. She has a crew of ninety men and eight officers, including Captain Ergomysheff, who is in command.

EFFORTS are being made in New York to form an American Physical Society similar to the Physical Society of London and the Deutsche physikalische Gesellschaft.

IT is announced in *Science* that Prof. F. L. O. Wadsworth has been appointed by the managers of the Western Pennsylvania University to succeed Prof. J. E. Keeler as director of the Allegheny Observatory. Dr. J. L. Wortman, of the American Museum of Natural History, has resigned his position in the museum in order to take charge of the new collections of vertebrate fossils in the Carnegie Museum at Pittsburg.

THE Rome correspondent of the *British Medical Journal* states that since the beginning of May, Prof. Koch and his assistants have installed themselves at the Municipal Hospital of Grosseto, where they are continuing their researches on malaria. Grosseto is a town situated in the line between Genoa and Rome, and is surrounded by an extensive plain, which in olden times was the Lacus Prelius of Cicero. This lake gradually became a morass and caused malaria. By skilful drainage and other means, the Italian Government has converted nearly the whole of this morass into valuable pasturage, and has thus lessened greatly the malaria. It is said that Prof. Koch intends to go to South Africa to continue his studies there when he leaves Grosseto.

A REUTER telegram from Stockholm, dated June 6, says that the Anthropological and Geographical Society in Stockholm has received the following telegram from Herr Vathne, a shipowner at Mandal:—"Captain Hueland, of the steamship *Vaagen*, who arrived there on Monday morning, reports that when off Kola Fjord, Iceland, in 65° 34' north lat., 21° 28' west long., on May 14 he found a drifting buoy marked 'No. 7.' Inside the buoy was a capsule, marked 'Andrée's Polar Expedition,' containing a slip of paper, on which was written the following:—"Drifting buoy, No. 7. This buoy was thrown out from Andrée's balloon on July 11, 1897 10.55 p.m., Greenwich mean time, 82° north lat., 25° east long. We are at an altitude of 600 metres; all well. Andrée, Strindberg, Fraenckel.'" Herr Andrée made his ascent from Danes Island on July 11, 1897, at 3 o'clock in the afternoon, so that when the buoy was thrown out the explorer had only travelled seven hours and fifty-five minutes.

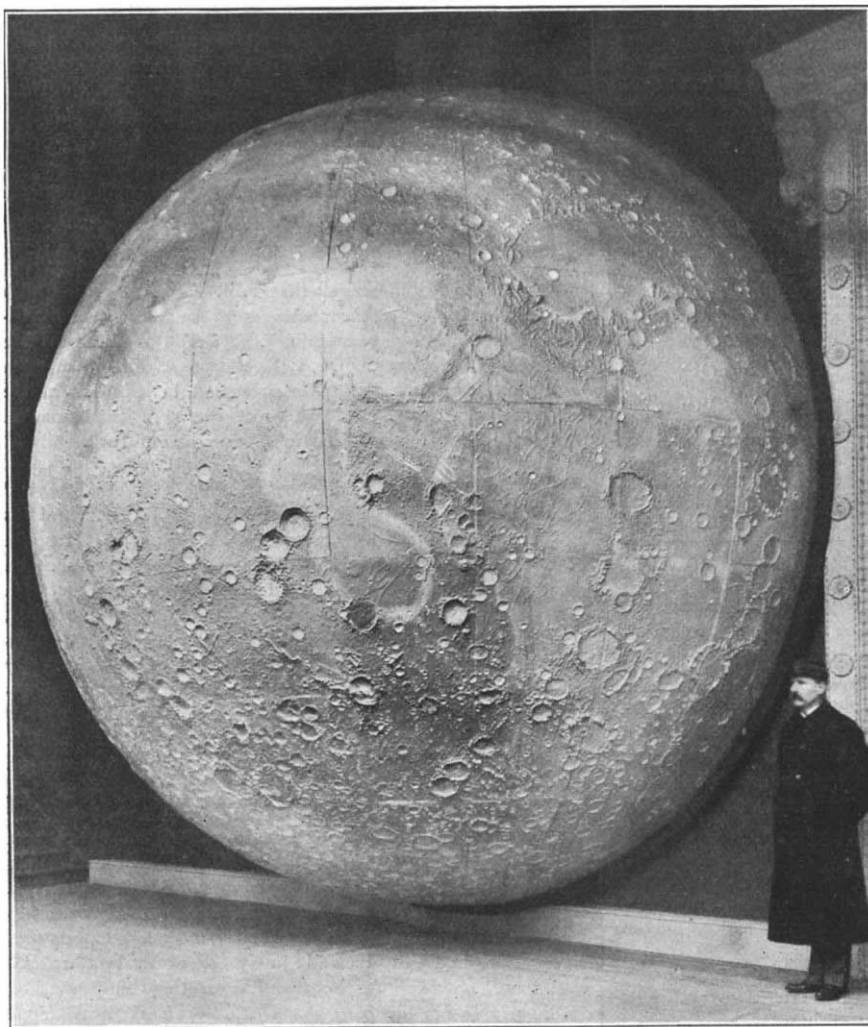
A CONFERENCE of representatives of Sea Fishery Boards with officials of the Board of Trade took place at Westminster on Tuesday, under the presidency of Mr. Ritchie. In his remarks

upon opening the proceedings, Mr. Ritchie referred to the forthcoming fishery conference at Stockholm, and said that whilst the Government were anxious to have the purely scientific branch of the subject dealt with, they had also instructed their delegates to see whether some agreement could not be come to whereby there should be an increase of the productiveness of the fisheries, and thus secure a permanent increase of fish in the markets adjoining the North Sea. Sir John Murray, Mr. Arter, and Prof. D'Arcy Thompson will represent the Government at the conference.

THE following State legislation in 1898, mentioned in the *American Naturalist*, is of interest to naturalists. New Jersey

(November to March). November was one of the coolest on record, being $2^{\circ}8$ below the average; this was followed by a hot December, with a mean temperature of $76^{\circ}4$, which has only once been exceeded. January was the coldest during the forty-two years' records at Adelaide, and was followed by a hot February. The highest temperature during the month was $113^{\circ}6$, which was the hottest day since January 1880. During the summer the thermometer read over 90° on forty-two days, of which about half were over 100° . The mean temperature for the five months, $71^{\circ}6$, is just above the average.

AN apparatus, by means of which a record is automatically taken of the extent to which the steering wheel of a ship is moved and the helm put over, has been devised by Mr. J. E. Liardet. The apparatus consists principally of a couple of drums on which a "tape" or long strip of paper is wound. The movement of the wheel actuates these drums, unwinding the tape from one and winding it on the other, the motions being obtained by suitable toothed gearing. In the same way, a pencil fixed to a holder is caused to move to one side of the central line of the paper if the helm is put to port, and the other side when the helm is starboarded, the amplitude of the movement of the pencil being proportionate to the angle of helm. In this way, an accurate record may be kept of the number of times and the amount the helm is shifted. It is proposed to add clockwork mechanism, so that the paper will be continuously unwound at a uniform speed, and the time at which any movement is made will thus be recorded.



Model of the Moon. Field Columbian Museum. (Diameter, 19 feet.)

has provided for a State entomologist; Louisiana has passed a Bill providing for the establishment of a biological station in the Gulf of Mexico, to co-operate with the United States Fish Commission for the investigation of problems affecting the fisheries of the State; New York has forbidden the killing at any time of wild moose, elk, caribou, and antelope; Ohio has repealed the law relative to the trapping or killing of musk-rats, mink, and otter.

SIR CHARLES TODD has communicated some interesting notes to the *Adelaide Advertiser* of April 18, relating to the meteorology of South Australia during the past summer

great care from the charts of Beer and Madler, and of Dr. Schmidt, of the Athens Observatory. Five years were occupied in its construction. The sections of the model have been for several years in Chicago, but they have only been available to the public at rare intervals. It is through the generosity of Mr. L. W. Reese that this noteworthy object has been added to the collections in the Field Columbian Museum. The model as exhibited will undoubtedly prove of great interest to the public generally, and especially to students of astronomy. Chicago is fortunate in possessing such a striking representation of lunar topography.

THE absence of palæolithic implements from Scotland has been explained by glacial conditions or the submergence of the country. Neither of these explanations seems to the Rev. F. Smith to be adequate, for during part at least of the period in question (as during the deposition of the *Cyrena fluminalis* beds) the climate of Britain was warmer than it is now, and the geographical occurrence of palæolithic remains in England and France evidence the period to have been that of great upheaval, and it is improbable that Scotland was then submerged. He finds (*Proc. Philosoph. Soc.*, Glasgow, 1899) a more sufficient explanation in the suggestion that the searchers were looking for the wrong thing. The ordinary types being flints, flint specimens were sought in Scotland; but no flint exists *in situ* in Scotland. Either palæolithic man was limited in his habitat to the geographical occurrence of flint, or that such specimens as might exist in Scotland would be fashioned of the rocks native to the country, and would be lacking in the peculiar characteristics of flaked flint. The first assumption is probably erroneous, so Mr. Smith has spent many years to an investigation of the alternative proposition. Under analogous conditions to those which obtain in the Somme Valley, he has found in the valleys of the Forth, Tay, Earn, Allan, Dee and Don, and in the Clyde Estuary, stones of quartzite, basalt, and various igneous rocks which certainly bear a superficial resemblance to well-known palæolithic types. The author acknowledges that these stones can only be fully appreciated by being handled, and that his illustrations do not do them justice. The author's contention is certainly tenable, but the evidence of the specimens can only be gauged by actual inspection.

THE origin of religion has long been a difficult problem, and is likely to remain obscure for some time yet. The germ, according to Tylor, lies in the belief in spiritual beings; Lippert finds it in the worship of the soul. Herbert Spencer has stated that ancestor worship is the root of every religion, and again that there is strong warrant for the inference that ghost-propitiation is the origin of all religions. C. L. Henning attempts in *The American Anthropologist* (vol. xi. p. 373) to solve the question from quite another standpoint. All the investigators in this field, without exception, have neglected one principal factor in their respective researches—the economic conditions. Primitive man had no religion; this was the product of much later times, and did not arise from a so-called "religious sentiment." A system of social virtues, or in other words a primitive social morality, was early developed owing to men being united in hordes; but this has nothing to do with religious perceptions. A man who during his life ameliorated the economic conditions of his tribal companions was not forgotten after his death; of this there are innumerable past and present examples. Such men after their death became heroes or benefactors of their respective tribes. The veneration they enjoyed during life changed after their death into ancestor worship, and later on into soul worship; the two latter forms of worship are the beginning of the historical evolution of religion.

THE Geology and Agriculture of the Department of the Lozère, in the south of France, forms the subject of an elaborate article by M. Ernest Cord (*Bull. de la Soc. d'Encouragement pour l'Industrie Nationale*, Paris). In the second part of his work, published in April, the author gives an account of the Triassic and Liassic strata. The Trias, which consists mostly of sandstones and conglomerates, with some argillaceous layers, occupies small tracts of woodland with fine chesnut-trees and much oak coppice. The central plateau of the Lozère, consisting of gneiss, mica schist, and granite, is bordered by Jurassic rocks which formerly overspread this group of ancient rocks. From the Rhætic Beds to the Upper Lias the various stages are well represented. Much of the soil on the Rhætic formation

is a kind of arkose, derived from granitic débris in the strata, and it is dry and sandy; nevertheless there are calcareous ingredients, and the beech flourishes. The higher portions of the "Infra-Lias" and the Lias proper consist mainly of limestones, marls and clays, and they form a rich agricultural district—cereals, vegetables and fruit being cultivated. Attention is directed to the magnesian limestones, which form striking features in the upper part of the "Infra-Lias." These limestones are much fissured, and the streams in many instances pass underground and reappear at lower levels. Several illustrations of these swallet-holes are given. The magnesian waters have an injurious effect on those who are accustomed to drink them, and it is noted that goitre is met with among the residents in these districts.

IN the *Verhandlungen der k. k. geol. Reichsanstalt*, No. 2, 1899, some results of recent geological work in southern Dalmatia are described by G. Bukowski. In the region examined, the tectonic relations were found to be of a very complex character, and overfolding and overthrusting have occurred upon an enormous scale. This may be well understood when it is said that the Hallstadt limestones, forming the base of the series observed, are overlain by Cretaceous and older Tertiary rocks, to be followed in turn by Triassic Dachstein-limestone. In places, the Tertiary beds have become completely squeezed out, in which case the Dachsteinkalk rests directly upon the Cretaceous limestones. In the region of southern Pastrovicchio, the upper beds of the *Diplopora*-limestone have yielded a brachiopod-fauna peculiar for its richness in species and individuals of *Spirigera*. In the upper Triassic limestones, a marked change of facies is apparent. The tufaceous complex of the Dzurmani-beds is overlain by rocks having a Hallstadt cephalopod-facies, which yields in turn, in the higher beds, to a coral-reef facies.

To the *Verhandlungen der k. k. geol. Reichsanstalt*, No. 3, 1899, Dr. J. J. Jahn contributes a short paper on the occurrence of moldavite (bouteillenstein) in the pyrope-bearing sands (early Diluvial) of northern Bohemia. After describing specimens found at localities west of Trebnitz, the author gives a summary of the results of experiments carried out by Herr Jos. Bareš, who has investigated the behaviour of moldavite when subjected to very high temperatures, with a view to clearing up the question of its origin. From a comparison of the chemical composition and physical properties of serpentine and moldavite, the hypothesis that the latter has had its origin in the former, as held by Helmhacker, derives no support whatever. By experiments carried out with various kinds of glass, and a comparison of the behaviour of these and of moldavite at temperatures ranging up to 1400° C., as also by a comparison of the chemical composition of the respective substances, Bareš obtains strong evidence against the correctness of the theory that bouteillenstein is an artificial product of glass manufacture. Further experiments refute also the hypothesis that moldavite may have been produced, by the aid of volcanic activity, from felspar-bearing rock rich in silica. From a consideration of the form and surface structure of the various specimens, and their behaviour under the highest temperatures, Herr Bareš agrees with Dr. F. E. Suess in recognising the probability of a cosmic origin.

THE May number of the *Zoologist* contains a very interesting account by Mr. Cronwright Schreiner on the recent extraordinary "trek" of Springbuck in the Cape Colony. The vast number in which these antelopes migrated in former years is a familiar fact; but in recent times they were believed to have ceased for ever. All the more remarkable, therefore, is it to hear of the great "trek" which occurred in July 1896. On the occasion when he saw the largest herd, Mr. Schreiner believes that there

were at least half a million antelopes in sight at once; and from this it is inferred that the whole "trek" must have included millions. Of course, thousands of head fell to the rifles of the Boer and other hunters; and a brisk trade sprang up in hides and meat. The writer of the paper infers that a migration on such a scale will never be seen again, for the reason that the Springbuck will be unable to recruit their numbers to a sufficient degree.

WE are asked to announce that the second annual dinner of the Association of Old Students of the Central Technical College will be held on Thursday, July 6.

THE *Quarterly Journal of Microscopical Science* contains two papers by Mr. J. E. S. Moore, dealing with his researches on the Molluscs of the great African lakes, especially Tanganyika. In the first paper, which discusses the morphology of the two littoral forms *Tanganyikia* and *Spekia*, the most interesting relates to the ancestry of the terrestrial *Cyclophoridae*. It is suggested that they trace their origin from some fresh-water derivative of the Tanganyika genus *Purpurina*, such as the cretaceous *Pyrgulifera*, which may represent a fresh-water non-halolimnic development of the type. The second paper deals with the truly halolimnic genera *Nassopsis* and *Bythoceras*. In regard to these and allied types, the author makes the following concluding observations. "We have the wonderful similarity of the halolimnic shells now living in Tanganyika to those which have been left fossilised at the bottom of the old Jurassic seas; and, lastly, there are the morphological characters of the halolimnic animals themselves, whereby they become mentally depicted like nothing so much as the incompletely developed embryos of numerous living oceanic types."

A COPY of volume x. of the *Transactions of the American Pediatric Society*, edited by Dr. Floyd M. Crandall, has been received. A number of papers and reports on infantile diseases are contained in the volume, one of the most important being a statement of the results of the Society's collective investigation on infantile scurvy in North America.

"A Select Bibliography of Chemistry" (1492-1892), by Prof. H. Carrington Bolton, was published in 1893. The first supplement of this volume, including words omitted in the previous volume, and bringing the literature of chemistry down to the close of the year 1897, has just been issued as No. 1170 of the *Smithsonian Miscellaneous Collections*. The sections into which the titles are grouped are: bibliography, dictionaries, history, biography, chemistry (pure and applied), and periodicals, the titles being in each case arranged alphabetically according to authors. The section dealing with alchemy has been dropped. The number of titles in the original volume was 12,031, and the number in the present volume is 5554, making a total of 17,585. Germany comes first in the number of additional titles, with a total of 1461. France follows with 1085 titles, England with 972, and Russia with 581 titles. The next six countries in order of their number of contributions to chemical literature are: Iceland, 434; Sweden, 196; Holland, 191; Denmark, 151; Portugal, 123; Bohemia, 98.

A COMMENDABLE characteristic of the report of the Marlborough College Natural History Society is a collection of anthropometrical particulars referring to boys in the school, obtained by Mr. E. Meyrick. The measurements are a continuation of records published last year. For each boy the information tabulated is his form, age, height, weight, size of chest expanded and contracted, and where possible the increase compared with last year's measures. Information of this kind is of real service to students of physical anthropology. Among

other noteworthy matters in the report is a list of 417 wild flowering plants observed by members of the botanical section, one member, Mr. F. E. Thompson, having obtained no less than 189, a worthy conclusion on his part to a series of botanical observations extending over thirty years. Appended to the usual meteorological statistics for every day of 1898 is a summary of the meteorology of Marlborough for the ten years 1889-1898. In addition, the report contains sectional reports, notes and observations, notes on lectures, and a variety of other information—all instructive and of interest as showing the development of the scientific spirit in a public school.

THE additions to the Zoological Society's Gardens during the past week include a Green Monkey (*Cercopithecus callitrichus*, ♀) from West Africa, presented by Dr. H. Strachan; a Rufous Tinamou (*Rhynchotus rufescens*) from Brazil, presented by Mr. Henry Bell; a Common Kingfisher (*Alcedo ispida*) from Ireland, presented by Mr. Ronald Edwards; two Jackdaws (*Corvus monedula*, white var.), European, presented by Mr. Eardley Wilmot B. Holt; two Secretary Vultures (*Serpentarius reptilivorus*) from South Africa, presented by Mr. J. E. Matcham; two Green Turtles (*Chelone mydas*) from the Gulf of Manor, presented by Captain Geo. G. C. Stevenson; two Black-striped Wallabies (*Macropus dorsalis*, ♂ ♀) from New South Wales, two Stonechats (*Pratincola rubicola*) from South of France, two Derbian Parrakeets (*Palaeornis derbyana*) from China (?), a South Albemarle Tortoise (*Testudo vicina*) from South Albemarle Island, deposited; a Musk Duck (*Biziura lobata*) from Australia, three Barbary Turtle Doves (*Turtur risorius*) from Africa, a Tuatera Lizard (*Sphenodon punctatus*) from New Zealand, purchased; two Collared Fruit Bats (*Cynonycteris collaris*), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

COMET 1899 a (SWIFT).—

Ephemeris for 12h. Berlin Mean Time.

1899.	R.A.	Decl.	Br.
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9 ...	48 32 ...	44 39.5 ...	
10 ...	39 2 ...	43 2.2 ...	0.75
11 ...	30 32 ...	41 27.2 ...	
12 ...	22 56 ...	39 54.7 ...	0.63
13 ...	16 5 ...	38 25.4 ...	
14 ...	9 57 ...	36 59.3 ...	0.53
15 ...	15 4 27 ...	35 36.6 ...	
16 ...	14 59 29 ...	34 17.3 ...	0.45
17 ...	54 57 ...	33 1.3 ...	
18 ...	50 51 ...	31 48.7 ...	0.38
19 ...	47 7 ...	30 39.7 ...	
20 ...	14 43 45 ...	+ 29 33.4 ...	0.32

Being now almost two months past perihelion, the comet is rapidly becoming less conspicuous. During the week it will pass from Hercules into Bootis, its path being nearly parallel to a string of 4th mag. stars ϕ and χ Hercules, μ , δ and ϵ Bootis.

THE ROYAL OBSERVATORY, GREENWICH.

ON Saturday last (June 3), the Astronomer Royal presented his Annual Report to the Board of Visitors of the Royal Observatory, Greenwich. The weather was all that could be desired, and the large number of guests, numbering among them Prof. Cornu, was able to comfortably inspect the buildings and instruments, which had as usual been thrown open to view.

The following is a brief *résumé* taken from the report:—

Buildings.

The new Observatory building, which has been in progress since 1891, was completed last March, by the addition of the east and west wings. This handsome building provides much needed accommodation for the Observatory staff, for the photo-